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TO: Internal File

THRU: Robert Davidson, Team Lead RTD

FROM: James D. Smith, Reclamation Specialist JDS

RE: Technical Analysis of the Wild Horse Ridge Significant Revision, Co-op Mining Company, Bear Canyon Mine, ACT/015/025 - SR98 - 1(3)

SUMMARY:

The proposed Wild Horse Ridge amendment to the Bear Canyon Mine MRP is to expand the permit area to include Federal Leases U-020668 and U-38727 and fee coal owned by C.O.P. Development. This amendment is a significant revision to the MRP. The Wild Horse Ridge amendment was initially received by UDOGM on December 18, 1998 but was determined by UDOGM to be administratively incomplete. The permittee resubmitted on 28 September, 1999. A letter was sent to the Permittee November 16, 1999 indicating the Division had determined the amendment to be administratively complete, and an Technical Analysis (TA) was sent to the permittee on January 24, 2000. The permittee's response to that TA was received at UDOGM on May 8, 2000. This is the second TA of the proposed Wild Horse Ridge amendment.

TECHNICAL ANALYSIS:

ENVIRONMENTAL RESOURCE INFORMATION

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.22; R645-301-623, -301-724.

Analysis:

Changes to the text, mostly minor, have been made on pages 6-3, 6-6, 6-10, 6-11, 6-13, 6-16, 6-18, and 6-19 of Chapter 6. The proposed permit boundary as shown on revised Plates 6-1 through 6-12

includes federal leases U-020668 and U-38727 and fee coal owned by C.O.P. Development. Plate 6-1 is the Geology Map. Plates 6-2, 6-6, and 6-10 are overburden maps, Plates 6-3, 6-7, and 6-11 are isopach thickness maps, Plates 6-4, 6-8, 6-12 are structure contour maps, and Plates 6-5 and 6-9 are interseam isopach maps. Plates 6-2 through 6-12 are based on information from numerous borings and outcrop measurements: logs from many of these borings are in the MRP.

Plates 7-9 and 7-9A are stratigraphic cross-sections. Generalized logs for bore-holes T-1, T-2, T-3, T-5, SDH-1, SDH-2, and SDH-3 are shown on Plate 7-9 and those for WHR-1, WHR-2 , WHR-3, WHR-5, WHR-8, F-76-1, F-77-5, F-76-6, 77-3A, and F-77-11-A are on Plate 7-9A. The logs are not arranged on Plate 7-9A in a sequence that would usually be expected of a geologic cross section. 7-J1 and 7-J2 are stratigraphic cross-sections based on logs from bore holes SDH-1, SDH-2, MW-116, and MW-117. The MRP does not contain the original logs for any of these bore holes. Except for F-76-4 and F-77-B (Plate 7-9A), Plate 6-2 shows the locations for all bore-holes on Plates 7-9, 7-9A, 7J-1, and 7J-2.

The well completion diagram for MW91-14 has been submitted for inclusion in Appendix 7-A. This well is referred to as MW-114 throughout the MRP. It needs to be clarified in the MRP that MW91-14 and MW-114 designate the same well or bore-hole.

Drill-hole DH-3 was abandoned in 1993 and replaced by DH-4. Bore-hole logs and well completion diagrams for DH-1, DH-2, DH-3, and DH-4 are Appendix 7N-G (p. 6-13).

Logs for drill holes TS-6 through TS- 10 and TS-14 are in Appendix 6-A, but logs are not available for TS-12 and TS-13: there is apparently no TS-11. Locations for TS-6 through TS-10 are shown on Plates 6-9, 6-10, and 6-11. Locations for TS-12 through TS-14 are not shown on any of the maps, contrary to the statement at the bottom of Table 7.1-5. Exploration hole TS-5 is discussed in section 7.1.4 (p. 7-21), but there is no TS-5 on Plate 6-11, in Appendix 6-A, nor in Table 7.1-5. TS-5 initially flowed 0.5 gpm, which corresponds to TS-13 in Table 7.1-5. The identity of TS-5 needs to be clarified.

Logs for twelve in-mine bore holes are in Appendix 7A, but locations are not shown on a map. Locations for a "H" series of in-mine bore holes are shown on Plates 6-5 and 6-7, but there are no logs for these holes in the MRP.

There is no hydrology information available for the "WHR" series of bore-holes (Section 7.1-4, p. 7-20).

The current MRP includes a description of the areal and structural geology of the proposed permit and adjacent areas, including federal leases U-020668 and U-38727 and fee coal tract owned by C.O.P. Development. The description is based on maps and plans required as resource information for the plan, detailed site specific information, and geologic literature and practices. Additional geologic information has been submitted as part of Appendix 7J-I, Investigation of Groundwater and Surface Water Systems and Probable Hydrologic Consequences, a report by Mayo and Associates, LC. These descriptions show how areal and structural geology may affect the occurrence, availability, movement,

quantity, and quality of potentially impacted surface and ground water.

Coal isopach thickness maps indicate the Blind Canyon and Tank seams, but not the Hiawatha seam, are of minable thickness in portions of the Wild Horse Ridge area. The Hiawatha seam was previously thought to be continuous and of minable thickness, but recent drilling has revealed several sandstone channels that render the seam unminable in the vicinity of Bear and Fish Creeks (pp. 6-18 and 6-19 and Plate 6-7) and this seam is described as not minable in Table 3C-1. Revised Plates 3-4A and 3-4C show projected mining in the Blind Canyon and Tank seams, respectively, in the Wild Horse Ridge addition.

Subsidence is discussed in Appendix 3-C. Total calculated subsidence in the Wild Horse Ridge area is 7.3 feet, based on an average total thickness of 16.5 feet for the Tank and Blind Canyon seams: in the existing permit area, the calculated maximum subsidence is 14.1 feet based on an average total thickness of 22 feet for the Tank, Hiawatha, and Blind Canyon seams (Table 3C-1). Average thickness of the Blind Canyon seam is 9 feet and average depth is 1,200 feet, and for the Tank seam the averages are 7.5 feet thick and 950 feet deep.

Except as noted below, the application includes geologic information in sufficient detail to assist in determining the probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface and ground-water monitoring is necessary, and determining whether reclamation as required by the Utah Coal Mining Rules can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

At this time the Division does not require the collection, analysis, and description of additional geologic information to protect the hydrologic balance, to minimize or prevent subsidence, or to meet the performance standards. The Permittee has made no request to the Division to waive in whole or in part the requirements of the bore hole information or analysis required of this section.

Findings:

Information on geologic resources is not considered adequate to meet the requirements of this section. Prior to approval the Permittee must provide the following in accordance with:

R645-301-121.200, -624, - The well completion diagram for monitoring well MW91-14 has been submitted for inclusion in Appendix 7-A. This well is referred to as MW-114 throughout the MRP. It needs to be clarified in Appendix 7-A that MW91-14 is the same as MW-114.

R645-301-121.200, -624, - Exploration hole TS-5 is discussed in section 7.1.4 (p. 7-21), but there is no TS-5 on Plate 6-11, in Appendix 6-A, nor in Table 7.1-5. TS-5 initially flowed 0.5 gpm, which corresponds to TS-13 in Table 7.1-5. The identity of TS-5 needs to be clarified.

R645-301-622.100, - Locations for TS-12 through TS-14 are not shown on Plate 6-11 (nor any other map), contrary to the statement at the bottom of Table 7.1-5.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-720.

Findings:

The hydrologic resource information provided in the PAP is not considered adequate to meet the requirements of this section. Prior to approval the Permittee must provide the following in accordance with:

R645-301-150, - Page 7G-70 is missing from the new version of Appendix 7-G.

R645-301-150, - The C2 form with the September 1998 submittal indicates that pages 7H-1 through 7H-51 are being replaced: pages 7H-38 through 7H-44 were not included with the submittal.

R645-301-150, -622, - The C2 form lists Plate 7-4A as part of the significant revision submitted in September 1998, but a copy of Plate 7-4A could not be found in the submitted material and this plate is not listed in the Table of Contents for Chapter 7.

RECOMMENDATION:

Prior to approval, the Permittee must meet the requirements of R645-301-121.200, R645-301-622, R645-301-624, and R645-301-724 as outlined above.

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